P-189

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30 October 1956

MEMORANDUM FOR: THE RECORD

SUBJECT : Project Monitor at [redacted] 25X1

1. Time and Place of Meeting: 22 October 1956, at [redacted] 25X1

[redacted] 25X1

2. Attendance: [redacted] 25X1

3. Discussion:

a. [redacted] demonstrated the following microphones developed under P-189: 25X1

(1) The Type B, which is the basic microphone whose characteristics were described in the previous report.

(2) The type B-A, which is the same basic microphone as the Type B except that a transistorized preamplifier has been added. The preamplifier adds about 18 db to the output level. It requires a DC power source of 3V at a 1/4 milliampere. There are two wires leading away from the unit and the impedance level is about 1000 ohms. The preamplifier is completely potted and adds only about 1/8" to overall size of the type B unit. During the course of testing this microphone, the DC power supply had been connected in reverse several times, without causing any permanent damage. In other words, when the polarity was corrected, the unit functioned perfectly.

(3) A cut down version of the type B whose nomenclature has not been established. This unit is about 1/4" smaller in length than the type B but it has about a 4 db lower sensitivity.

All the above units were placed in the anechoic chamber and conversation was listened to. The microphones were also compared using 6" and 18" probes attached to their front ends. Except for level differences, it seemed as though all three microphones had the same intelligibility when listened to under identical conditions.

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The initial task calls for delivery of 6 each of the type B and type B-A microphones. However, APD requested that we be supplied with some of the cut-down version. The only problem in this regard is the availability of funds. [redacted] will check their cost estimates and, if necessary, submit a request for additional funds to cover the supplying of any additional microphones. One of the type B microphones was hand carried to Washington for initial tests by TSS/APD. 25X1

The two British microphones were also placed in the anechoic chamber and their intelligibility with a 6" probe attached to each was compared to the [redacted] microphone. The dynamic unit (bigger of the two) seemed to have a muffled quality to it (may be due to a large dip in its low frequency characteristic), while the smaller one (a reluctance type) had a sharp, crisp sound indicative of a lack of low frequency response. 25X1

b. P-1198 - Directional Microphones. Various arrays of line elements using both gradient and pressure sensitive transducers have been built. Their various directional efficiencies and field patterns have been obtained and they compare well to what the theory predicts. In general, it looks like the improvement acquired using these directional elements in combination with something like a circular piston is small compared to the standard condenser microphone described in the previous report. It still has not been determined whether there are enough advantages obtainable to warrant building a full scale model using line elements. The additional complexity involved in building such a model would probably mean:

(1) The model would be incapable of being broken down into small modular sections for transport.

(2) Only one size and shape could be obtained. That is, there would be no way of increasing its size (thereby increasing its directivity) when space permits.

Work has also been done on a study of directional characteristics of non-directional elements in linear and surface arrays with various functions of phase and amplitude. No concrete results have been obtained to date.

[redacted] will soon request an extension of time on this contract since they have not spent their funds at a rate that was at first anticipated. They now plan to continue their research until the first of the year and try to survey all possible means of obtaining a directional microphone. At that time, all the data obtained will be discussed with the sponsor and a discussion will be had as to what model will be built, (if any), for Agency test and evaluation. 25X1

c. P-185 - Noise Reduction. As mentioned in the previous report, [redacted] is having unexpected difficulty with this project. The conclusion has been that the original concept presented of using only 10-20 fairly wide band channels (less than an octave apart) is not good enough when the S/N ratios are poor. [redacted] now views the project as more of a research program rather than a development project. They now propose to investigate the basic frequency bands where the speech energy of words and letters are concentrated. Very narrow band filters will then be built covering these bands; the hope again being that within these bands the average energy of speech is high and that there is no noise. It has been roughly estimated that 80-100 of these bands will be necessary to cover a range of about 300-3000 cps. 25X1 25X1

TBS/APD agreed that this change in direction and scope is satisfactory and [redacted] will soon forward a letter outlining the proposed changes and asking for contractual approval. 25X1

d. [redacted] discussed with RCA the possibilities of building a slot type microphone using the type B unit as the basic microphone. The problem would basically involve the design of the coupling probe (which would have the following shape) and the chamber where the microphone is placed. 25X1

[redacted] was asked to submit a cost and time estimate for 6 of these units. 25X1

The subject of a briefcase recorder was discussed with the group. Some of the probably specifications were mentioned and [redacted] was told that the formal specifications would be sent to them as soon as they were ready. In general, [redacted] attitude was cautious and they again emphasized that [redacted] was a research group and perhaps [redacted] would be a more suitable place for our development. However, they agreed to view the specifications and discuss them later with the undersigned. 25X1 25X1 25X1

[redacted] mentioned that we were always interested in obtaining good fidelity microphones of small size and would be willing to consider proposals along these lines. [redacted] briefly outlined a possible scheme for a microphone that might be only 3/4" in diameter and 3/8" thick. No definite action, however, was decided upon and future developments await interest on the part [redacted] 25X1 25X1 25X1 25X1

[redacted]
TBS/APD

Distribution:
P-119B
P-185
P-189
Chrono

TBS/APD/SPK/bf